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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,062	09/10/2003	Tomoaki Abe	AK-425XX	3830
207	7590	11/09/2005	EXAMINER	
WEINGARTEN, SCHURGIN, GAGNEBIN & LEOVICI LLP			RAABE, CHRISTOPHER M	
TEN POST OFFICE SQUARE				
BOSTON, MA 02109			ART UNIT	PAPER NUMBER
			2879	

DATE MAILED: 11/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/659,062	<b>Applicant(s)</b> ABE ET AL.	
	<b>Examiner</b> Christopher M. Raabe	<b>Art Unit</b> 2879	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

### **DETAILED ACTION**

1. Amendment filed August 12, 2005 has been entered and acknowledged by the examiner.

Applicant's arguments, see pages 7-11, filed August 12, 2005, with respect to the rejection(s) of claim(s) 1-19 under 35 USC 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made (see below).

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1,3,5,12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsing et al. (UK Patent Application GB 2361581), in view of Jankowski et al. (US Patent 3911430).

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With regard to claim 1,

Hsing et al. disclose a light-emitting diode for large current driving, comprising: a metal substrate provided with a distribution circuit formed on the surface thereof and electrically insulated therefrom (11,13 of fig 2A, and page 4); a metal base directly attached to and thereby in thermally contact with said metal substrate (115 of fig 2E), and provided with an LED chip mounted thereon (12 of fig 2A); a gold wire connecting said distribution circuit with said LED chip (132 of fig 2A and page 5); and a lens attached over a surface of said metal substrate on which a surface said LED chip is mounted, said lens covering part of said metal base including at least said gold wire (15 of fig 2A).

Hsing et al. do not disclose the lens material.

Jankowski et al. do disclose an LED with a plastic lens (column 2, lines 35-40).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the lens material of Jankowski et al. into the diode of Hsing et al. in order to provide an inexpensive, durable diode lens.

With regard to claim 3,

Hsing et al. disclose the light-emitting diode for large current driving.

Hsing et al. do not disclose the means for attaching the metal base to the metal substrate.

However, attaching items to a substrate by means of caulking or press fitting is well known and widely used in the art, and hence would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate into the LED of Hsing et al. in order to firmly secure the metal base to the metal substrate..

With regard to claim 5,

Hsing et al. disclose the light-emitting diode for large current driving, wherein the metal substrate is composed of copper or aluminum (page 4).

With regard to claim 12,

Hsing et al. disclose the light-emitting diode for large current driving, wherein the metal substrate is composed of copper or aluminum (page 4).

4. Claims 2,8,11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsing et al. and Jankowski et al. as applied to claim 1 above, and further in view of Yamaguchi (U.S. Patent 6392294).

With regard to claim 2.

Hsing et al. disclose the light-emitting diode for large current driving.

Hsing et al. do not disclose a light-emitting diode wherein a first through hole is formed in the metal substrate at least at one spot of which a location is corresponding to that of the lens and the lens is attached through said first through hole.

Yamaguchi does disclose a light-emitting diode wherein a first through hole is formed in a substrate at least at one spot of which a location is corresponding to that of a lens (13 of fig 2) and said lens is attached through said first through hole (50 of fig 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the through hole disclosed by Yamaguchi into the LED of Hsing et al. in order to firmly anchor the plastic lens to the metal substrate.

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With regard to claim 8,

Hsing et al. disclose the light-emitting diode for large current driving.

Hsing et al. do not disclose the means for attaching the metal base to the metal substrate.

However, attaching items to a substrate by means of caulking or press fitting is well known and widely used in the art, and hence would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate into the LED of Hsing et al. in order to firmly secure the metal base to the metal substrate.

With regard to claim 11,

Hsing et al. disclose the light-emitting diode for large current driving, wherein the metal substrate is composed of copper or aluminum (page 4).

5. Claims 4,13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsing et al. and Jankowski et al. as applied to claim 1 above, and further in view of Carey et al. (US Patent 6274924).

With regard to claim 4,

Hsing et al. disclose the light-emitting diode for large current driving.

Hsing et al. do not disclose the composition of the metal base.

Carey et al. do disclose a metal base composed of copper (column 2, lines 60-67).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the copper base of Carey et al. into the LED of Hsing et al. in order to provide a base with good thermal characteristics.

With regard to claim 13,

Hsing et al. disclose the light-emitting diode for large current driving, wherein the metal substrate is composed of copper or aluminum (page 4).

6. Claims 6,15,17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsing et al. and Jankowski et al. as applied to claim 1 above, and further in view of Odaki et al. (US Pre-grant Publication 2001/0050371).

With regard to claim 6,

Hsing et al. disclose the light-emitting diode for large current driving, wherein a space is formed on a rear of said plastic lens and between said plastic lens and said metal substrate to contain said LED chip, said gold wire and part of said metal base (15 of fig 2A), and is filled with a resin (14 of fig 2A).

Hsing et al. do not disclose the resin to be a silicone resin.

Odaki et al. do disclose the use of a silicone resin (paragraph 51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the resin of Odaki et al. into the LED of Hsing et al. in order to protect the LED chip.

With regard to claim 15,

Hsing et al. disclose the light-emitting diode for large current driving, wherein a space is formed on a rear of said plastic lens and between said plastic lens and said metal substrate to

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contain said LED chip, said gold wire and part of said metal base (15 of fig 2A), and is filled with a resin (14 of fig 2A).

Hsing et al. do not disclose the resin to be a silicone resin.

Odaki et al. do disclose the use of a silicone resin (paragraph 51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the resin of Odaki et al. into the LED of Hsing et al. in order to protect the LED chip.

With regard to claim 17,

Hsing et al. disclose the light-emitting diode for large current driving, wherein a space is formed on a rear of said plastic lens and between said plastic lens and said metal substrate to contain said LED chip, said gold wire and part of said metal base (15 of fig 2A), and is filled with a resin (14 of fig 2A).

Hsing et al. do not disclose the resin to be a silicone resin.

Odaki et al. do disclose the use of a silicone resin (paragraph 51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the resin of Odaki et al. into the LED of Hsing et al. in order to protect the LED chip.

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hsing et al., Jankowski et al., and Odaki et al. as applied to claim 6 above, and further in view of Furuyama (U.S. Patent 6516104).

With regard to claim 7,



Hsing et al. disclose the light-emitting diode for large current driving.

Hsing et al. do not disclose a light-emitting diode wherein at least one through hole is formed at a location in said metal substrate which a location corresponds to that of said space, and said silicone fills said space through said through hole.

Furuyama does disclose a light-emitting diode wherein at least one through hole is formed at a location in a metal substrate which a location corresponds to that of a space, and silicone fills the space through the through hole (column 9, lines 24-26).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the through hole of Furuyama into the LED of Hsing et al. in order to provide for effective application of the silicone resin.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hsing et al., Jankowski et al., and Yamaguchi as applied to claim 2 above, and further in view of Carey et al. (as above).

With regard to claim 9,

Hsing et al. disclose the light-emitting diode for large current driving.

Hsing et al. do not disclose the composition of the metal base.

Carey et al. do disclose a metal base composed of copper (column 2, lines 60-67).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the copper base of Carey et al. into the LED of Hsing et al. in order to provide a base with good thermal characteristics.

9. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hsing et al. and Jankowski et al., as applied to claim 3 above, and further in view of Carey et al. (as above).

With regard to claim 10,

Hsing et al. disclose the light-emitting diode for large current driving.

Hsing et al. do not disclose the composition of the metal base.

Carey et al. do disclose a metal base composed of copper (column 2, lines 60-67).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the copper base of Carey et al. into the LED of Hsing et al. in order to provide a base with good thermal characteristics.

10. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hsing et al., Jankowski et al., and Yamaguchi as applied to claim 2 above, and further in view of Odaki et al. (as above).

With regard to claim 14,

Hsing et al. disclose the light-emitting diode for large current driving, wherein a space is formed on a rear of said plastic lens and between said plastic lens and said metal substrate to contain said LED chip, said gold wire and part of said metal base (15 of fig 2A), and is filled with a resin (14 of fig 2A).

Hsing et al. do not disclose the resin to be a silicone resin.

Odaki et al. do disclose the use of a silicone resin (paragraph 51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the resin of Odaki et al. into the LED of Hsing et al. in order to protect the LED chip.

11. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hsing et al., Jankowski et al., and Carey et al., as applied to claim 4 above, and further in view of Odaki et al. (as above).

With regard to claim 16,

Hsing et al. disclose the light-emitting diode for large current driving, wherein a space is formed on a rear of said plastic lens and between said plastic lens and said metal substrate to contain said LED chip, said gold wire and part of said metal base (15 of fig 2A), and is filled with a resin (14 of fig 2A).

Hsing et al. do not disclose the resin to be a silicone resin.

Odaki et al. do disclose the use of a silicone resin (paragraph 51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the resin of Odaki et al. into the LED of Hsing et al. in order to protect the LED chip.

12. Claim 18 is rejected under 35 U.S. C. 103(a) as being unpatentable over Hsing et al., Jankowski et al., and Yamaguchi, as applied to claim 2 above, and further in view of Carey et al, and Odaki et al. (all as above).

With regard to claim 18,

Hsing et al. disclose the light-emitting diode for large current driving, wherein: said metal substrate is composed of copper or aluminum (page 4); a space is formed on a rear of said plastic lens and between said plastic lens and said metal substrate to contain said LED chip, said gold wire and part of said metal base, and is filled with a resin (14 of fig 2A).

Hsing et al. do not disclose said metal base being attached to said metal substrate by means of caulking or press fitting.

However, attaching items to a substrate by means of caulking or press fitting is well known and widely used in the art, and hence would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate into the LED of Hsing et al. in order to firmly secure the metal base to the metal substrate.

Hsing et al. also do not disclose the composition of the metal base, nor the resin.

Carey et al. do disclose a metal base is composed of copper (column 2, lines 60-67).

Odaki et al. do disclose the use of a silicone resin (paragraph 51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the resin of Odaki et al. and the composition of Carey et al. in order to protect the LED chip and provide good thermal characteristics.

13. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hsing et al., Jankowski et al., Yamaguchi, Carey et al., and Odaki et al., as applied to claim 18 above, and further in view of Furuyama (as above).

With regard to claim 19,

Hsing et al. disclose the light-emitting diode for large current driving.

Hsing et al. do not disclose a light-emitting diode wherein at least one through hole is formed at a location in said metal substrate which a location corresponds to that of said space, and said silicone fills said space through said through hole.

Furuyama does disclose a light-emitting diode wherein at least one through hole is formed at a location in a metal substrate which a location corresponds to that of a space, and silicone fills the space through the through hole (column 9, lines 24-26).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the through hole of Furuyama into the LED of Hsing et al. in order to provide for effective application of the silicone resin.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Raabe whose telephone number is 571-272-8434. The examiner can normally be reached on m-f 7am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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**ASHOK PATEL**  
**PRIMARY EXAMINER**